

# Stripped down: Hubble highlights two galaxies that are losing it

September 30 2009

---



This composite shows the two ram pressure stripping galaxies NGC 4522 and NGC 4402. Hubble's Advanced Camera for Surveys allows astronomers to study an interesting and important phenomenon called ram pressure stripping that is so powerful, it is capable of mangling galaxies and even halting their star formation. NGC 4522 is a spectacular example of a spiral galaxy that is currently being stripped of its gas content. The galaxy is part of the Virgo galaxy cluster and its rapid motion within the cluster results in strong winds across the galaxy as the gas within is left behind. Scientists estimate that the galaxy is moving at more than 10 million kilometres per hour. A number of newly formed star clusters that developed in the stripped gas can be seen in the Hubble image. The stripped spiral galaxy is located some 60 million light-years away from Earth. The second image shows NGC 4402 and highlights some telltale signs of ram pressure stripping such as the curved, or convex, appearance of the disc of gas and dust, a result of the forces exerted by the heated gas. Light being emitted by the disc backlights the swirling dust that is being swept out by the gas. Studying ram pressure stripping helps astronomers better understand the mechanisms that drive the evolution of galaxies, and how the rate of star formation is suppressed in very

dense regions of the Universe like clusters. Credit: NASA & ESA

(PhysOrg.com) -- Ram pressure is the drag force that results when something moves through a fluid -- much like the wind you feel in your face when bicycling, even on a still day -- and occurs in this context as galaxies orbiting about the centre of the cluster move through the intra-cluster medium, which then sweeps out gas from within the galaxies.

The [spiral galaxy](#) NGC 4522 is located some 60 million light-years away from Earth and it is a spectacular example of a spiral galaxy currently being stripped of its gas content. The galaxy is part of the Virgo galaxy cluster and its rapid motion within the cluster results in strong winds across the galaxy as the gas within is left behind. Scientists estimate that the galaxy is moving at more than 10 million kilometres per hour. A number of newly formed star clusters that developed in the stripped gas can be seen in the Hubble image.

Even though this is a still image, Hubble's view of NGC 4522 practically swirls off the page with apparent movement. It highlights the dramatic state of the galaxy, with an especially vivid view of the ghostly gas being forced out of it. Bright blue pockets of new star formation can be seen to the right and left of centre. The image is sufficiently deep to show distant background [galaxies](#).

The image of NGC 4402 also highlights some telltale signs of ram pressure stripping such as the curved, or convex, appearance of the disc of gas and dust, a result of the forces exerted by the heated gas. Light being emitted by the disc backlights the swirling dust that is being swept out by the gas. Studying ram pressure stripping helps astronomers better understand the mechanisms that drive the evolution of galaxies, and how the rate of [star formation](#) is suppressed in very dense regions of the

Universe like clusters.

Both images were taken by the Advanced Camera for Surveys on Hubble before it suffered from a power failure in 2007. Astronauts on Servicing Mission 4 in May 2009 were able to restore ACS during their 13-day mission.

Source: ESA/Hubble Information Centre ([news](#) : [web](#))

Citation: Stripped down: Hubble highlights two galaxies that are losing it (2009, September 30) retrieved 10 April 2024 from <https://phys.org/news/2009-09-hubble-highlights-galaxies.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--